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ABSTRACT

This study focuses on the nature of Propensity to Trust (PTT) in the context of Business-to-Customer (B2C) ecommerce. The Generalized Trust subscale of Couch, Adams and Jones (1996) was used to examine it. In the B2C ecommerce context, the one factor model of PTT (i.e., Generalized Trust proposed by Couch et al., 1996) did not fit the empirical data well. Initial exploratory factor analysis revealed four factors (General PTT, Moderate PTT, Skeptical PTT, and Specific PTT). Further analysis resulted in a two factor model of PTT (General PTT and Specific PTT) which showed acceptable levels of reliability and validity. External nomological validity of the two factor model of PTT was also displayed with slight modification of the model. The results are discussed for comparison with previous studies and for future studies of PTT.

Keywords

Propensity to trust (PTT), competence trust, ecommerce

INTRODUCTION

Propensity to trust (PTT) is "a stable within-party factor that will affect the likelihood the party will trust" (Mayer et al., 1995, p. 715). It is "a person's general willingness to trust others" (p. 714) that is "stable across situations" (p. 716). A similar concept, disposition to trust, was explained as "the extent that she or he demonstrates a consistent tendency to be willing to depend on others across a broad spectrum of situations and persons" (McKnight, Cummings and Chervany, 1998, p. 477). McKnight et al. further developed the construct by operationalizing it with two subscales, i.e., Faith in Humanity and Trusting Stance (McKnight, Choudhury and Kacmar, 2002).

Propensity to trust is one aspect of trust, and it should be also an important aspect of trust in the context of ecommerce. There have been some studies of propensity to trust in the ecommerce context, but the results are mixed. For instance, some studies found direct effects of PTT on trust (e.g., Gefen, 2000; McKnight et al., 2002) while others found no direct effects (e.g., Koufaris and Hampton-Sosa, 2004; Lowry, Vance, Moody, Beckman and Read, 2008). We believe that these mixed results should be explained clearly so that we can understand the nature of propensity to trust and thus can use the scale more appropriately in future research.

As an initial step, we tried to find the nature of propensity to trust by analyzing a previously developed scale (Generalized Trust subscale of the Trust Inventory by Couch et al., 1996) that seems to be related to propensity to trust. We also compared the result with the deductively developed scale by McKnight et al. (2002), which may shed light on future studies of propensity to trust.

ANALYSIS OF PROPENSITY TO TRUST

The Generalized Trust subscale of the Trust Inventory by Couch et al. (1996) was developed based on previous studies in the psychology area as a tool to explain trust in romantic partners and others. Originally they proposed three subscales (i.e., Generalized Trust, Partner Trust, and Network Trust), and provided some evidence of validity and reliability of the two subscales (i.e., Generalized Trust and Partner Trust) with 40 items. Our study uses the Generalized Trust subscale of the Trust Inventory because the items seem to capture the nature of PTT.

Setup of the Questionnaire Survey Experimentation

A survey questionnaire was prepared to collect data from college students in a U.S. university. For this study, four real-world online retailer websites were selected in such a way that the participants would have not visited before the survey (a series of pretests were conducted to screen out problematic websites, resulting in four appropriate websites). A series of survey

sessions were done in classrooms with Internet-accessible computers. During the survey session, each participant was randomly assigned to a website, and asked to spend about 15 to 20 minutes to navigate the website. After the navigation, each participant was asked to use his/her initial experience to complete the prepared questionnaire. The students participated in the sessions voluntarily and seemed to be engaged in the process sincerely.

The experimental questionnaire survey provided 319 cases and the screening process resulted in 302 usable cases. The selected cases were divided into two groups (i.e., first half and second half). The first half of the data was used in the main analysis, and the second half was used as a hold-out sample. The main data included 151 cases which consisted of 63 female participants (41.7%) and 87 male participants (57.6%). Most participants were in the age range between 18 and 30 (91.4%).

Analysis of the Data

To examine the unidimensionality of the Generalized Trust subscale, a confirmatory factor analysis (CFA) using Amos was conducted with the 20 items of the scale with one latent variable (PTT). This model, however, didn't fit well with the data (Chi-square = 656.876, df = 170, Chi-square/df = 3.864; GFI = 0.651; NFI = 0.531; CFI = 0.527; RMSEA = 0.138, $p < 0.001$, range between 0.127 and 0.149), which may imply problems of the unidimensionality of the scale.

Dimension[1]	Code[2]	Item	Reference[3]
General PTT	PTT1	I tend to be accepting of others.	2
	PTT2	My relationships with others are characterized by trust and acceptance.	4
	PTT3	Basically, I am a trusting person.	6
	PTT8*	I make friends easily.	14
	PTT10**	I find it better to accept others for what they say and what they appear to be.	19
	PTT16*	Even during the "bad times," I tend to think that things will work out in the end.	31
Moderate PTT	PTT4*	It is better to trust people until they prove otherwise than to be suspicious of others until they prove otherwise.	7
	PTT5*	I accept others at "face value."	8
	PTT6*	Most people are trustworthy.	10
	PTT12*	I have few difficulties trusting people.	22
	PTT17*	I tend to take others at their word.	34
	PTT20*	I almost always believe what people tell me.	20
Skeptical PTT	PTT7*	It is better to be suspicious of people you have just met, until you know them better.	13
	PTT9*	Only a fool would trust most people.	16
	PTT11*	I would admit to being more than a little paranoid about people I meet.	20
	PTT13*	Basically, I tend to be distrustful of others.	24
	PTT14*	Experience has taught me to be doubtful of others until I know they can be trusted.	27
Specific PTT	PTT15	I have a lot of faith in the people I know.	30
	PTT18	When it comes to people I know, I am believing and accepting.	35
	PTT19	I feel I can depend on most people I know.	37

[1] The dimensions proposed from the exploratory factor analysis and item analysis
[2] The item numbers used in this study
[3] The item numbers used in the original Couch et al. (1996)
* Items dropped in the final model
** This item was removed in the second confirmatory factor analysis due to a cross loading problem.

Table 1. Items for Propensity to Trust

The result of the confirmatory factor analysis implied possible multi-dimensional nature of PTT, and thus exploratory factor analysis (principal factors extraction with varimax rotation and eigenvalue of one) was performed. With the analysis, four factors were extracted. Upon examining the items with the factors, we tagged the factors with appropriate names temporarily for convenience as shown in Table 1: General Trust, Moderate Trust, Skeptical Trust, and Specific Trust.

The General PTT scale seems to capture the Faith in Humanity scale of McKnight et al. (1998) while the Moderate PTT scale is related to the Trusting Stance scale (McKnight et al., 1998). For instance, "faith in humanity" is a person's tendency towards others in general without any calculative process (i.e., General PTT). On the other hand, the Moderate PTT items

imply a certain level of calculative process. The other scales (i.e., Skeptical PTT and Specific PTT) were not identified in the previous studies, but seem to be relevant to the nature of PTT.

With the four factors, another confirmatory factor analysis was performed as shown in Figure 1. This model didn't fit the data well, either (Chi-square = 311.811, df = 146, Chi-square/df = 2.136; GFI = 0.832; NFI = 0.765; CFI = 0.640; RMSEA = 0.087, $p < 0.001$, range between 0.074 and 0.100).

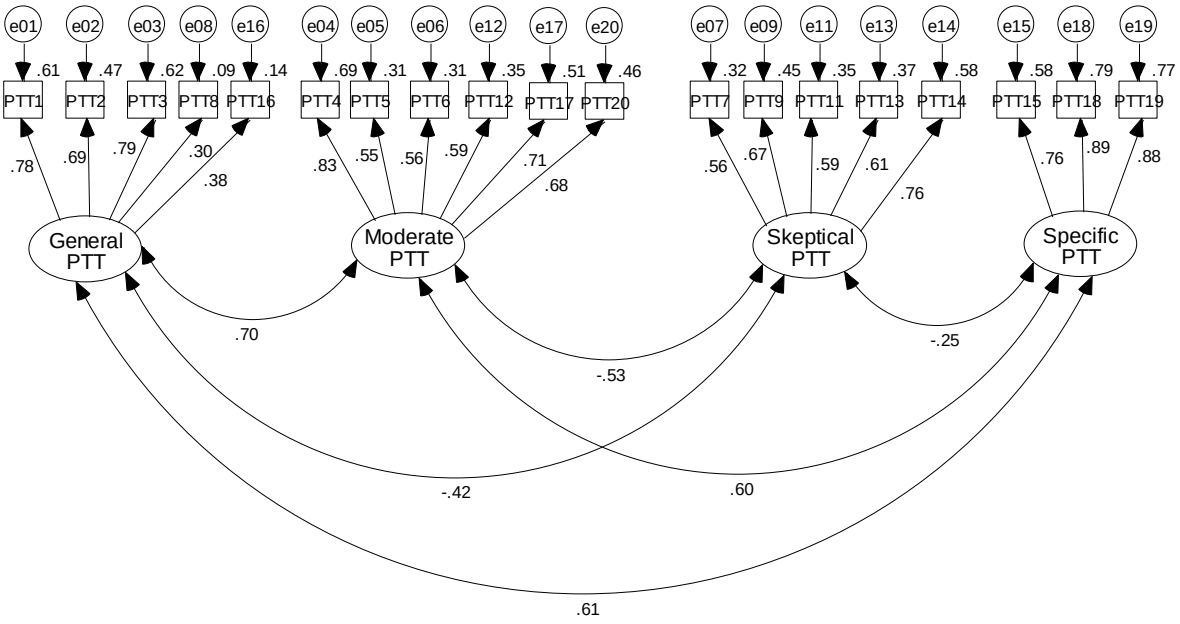

Figure 1. Measurement Model with Four Factors

Further analysis resulted in a two factor model (Figure 2) which fit the data better (Chi-square = 16.456, df = 8, Chi-square/df = 2.057; GFI = 0.966; NFI = 0.963; CFI = 0.980; RMSEA = 0.084, $p = 0.147$, range between 0.020 and 0.142) than the one-factor model. The constructs of the two factor model also provided acceptable levels of reliability and validity. The Cronbach' α of General PTT was 0.79, and that of Specific PTT was 0.88. The average variance extracted (AVE) of General PTT was 0.568, and that of Specific PTT was 0.709. The AVE values were greater than the squared correlation between the latent variables.

Next, the second half of the data was used to examine the two factor model, and the model fit the data better (Chi-square = 10.611, df = 8, Chi-square/df = 1.326; GFI = 0.977; NFI = 0.974; CFI = 0.993; RMSEA = 0.047, p 0.468, range between 0.000 and 0.113) than the model with the first half of the data. The reliability and validity of the scales were also provided: General PTT (Cronbach' α = 0.81, AVE = 0.588), Specific PTT (Cronbach' α = 0.84, AVE = 0.647). With the second half of the data set, the AVE values were also greater than the squared correlation between the latent variables.

Therefore, the two factor model of PTT seems to be reliable (internal consistency measured with the α values) and valid (construct validity tested with the AVE and correlation values, i.e., convergent and discriminant validity).

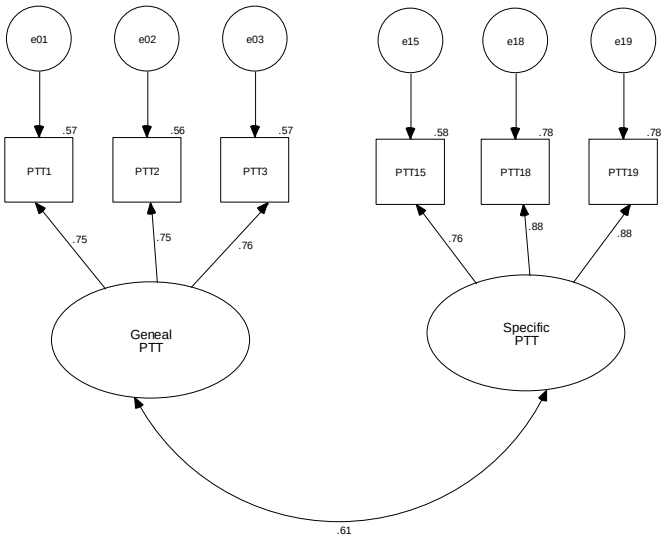

Figure 2 Measurement Model with Two Factors

To check external nomological validity, an additional scale (Competence Trust subscale of the e-commerce trusting belief construct) was used as shown in Table 2. Previous studies proposed (e.g., McKnight et al., 1998) or showed empirical evidence of the effect of PTT on trust (e.g., Gefen, 2000), and thus the variable seems to be useful to check the validity.

Code	Item
TR1	I believe that the company has the competence to provide goods and/or services that I need.
TR2	I believe that the goods and/or services that the company provides must be of high quality.
TR3	I believe that the company has the expertise to provide mechanisms for safe and reliable transactions.
TR4	I believe that the company has the capacity and resources to provide high quality goods and/or services.
TR5*	I don't think that the company has the capability to provide customers with high quality goods and/or services

* Dropped in the final analysis due to cross loading problems

Table 2. Competence Trust subscale of Ecommerce Trusting Belief Inventory

Before testing the relationship between PTT and trust (Competence Trust), a measurement model was examined as shown in Figure 3. The indexes indicated that the model fit the data well: Chi-square = 49.536, df = 32, Chi-square/df = 1.548; GFI = 0.940; NFI = 0.938; CFI = 0.977; RMSEA = 0.06, p = 0.281, range between 0.022 and 0.092. There was also evidence of reliability and validity: General PTT (Cronbach' $\alpha = 0.79$, AVE = 0.563), Specific PTT (Cronbach' $\alpha = 0.88$, AVE = 0.715), Competence Trust (Cronbach' $\alpha = 0.88$, AVE = 0.642). The squared correlations among the latent variables were less than the AVE values.

The structural model (Figure 4) also fit the data well (Chi-square = 49.536, df = 32, Chi-square/df = 1.548; GFI = 0.940; NFI = 0.938; CFI = 0.977; RMSEA = 0.06, p = 0.281, range between 0.022 and 0.092), but the path coefficient of Competence regressed on Specific PTT was not statistically significant.

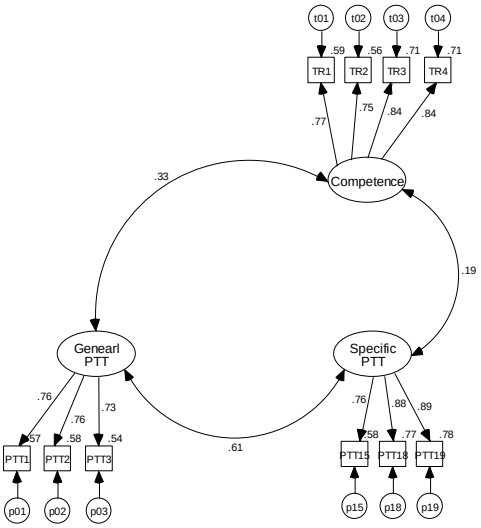

Figure 3. Measurement Model

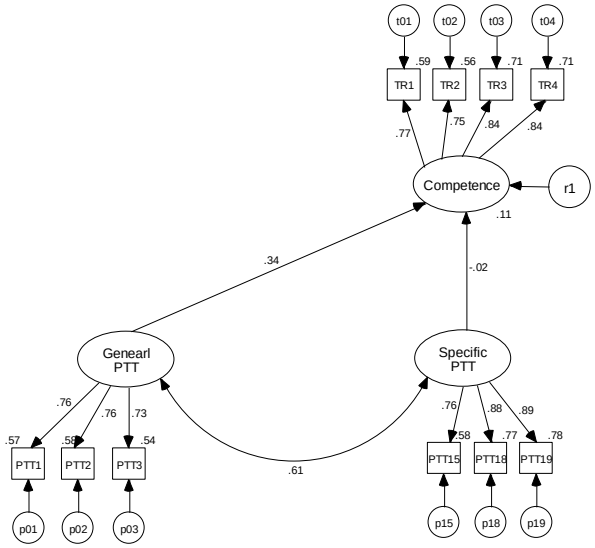

Figure 4. Structural Model

Further analysis indentified an alternative model (Figure 5) that fit the data slightly better: Chi-square = 49.554, df = 33, Chi-square/df = 1.502; GFI = 0.940; NFI = 0.938; CFI = 0.978; RMSEA = 0.058, p = 0.325, range between 0.017 and 0.089.

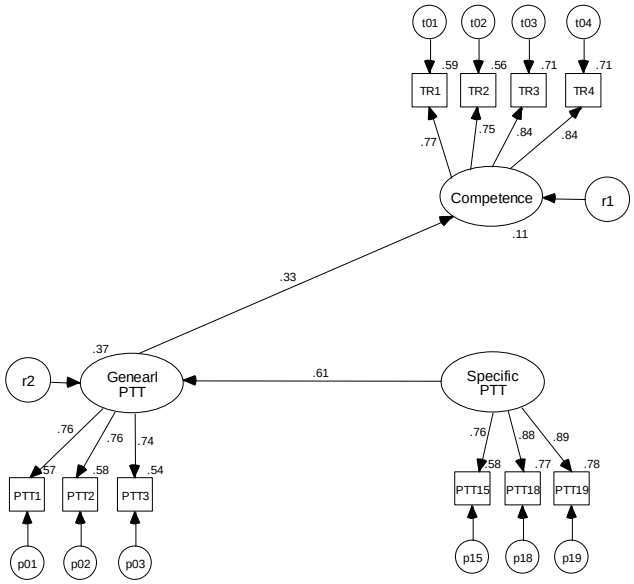

Figure 5. Alternative Structural Model

The alternative model includes a path between General PTT and Specific PTT. The path direction is based on logical deduction. For instance, a person develops trust from specific instances to general ones. With the alternative model, the effect of PTT (General PTT) on Competence Trust is statistically significant, which provides evidence of external

nomological validity of the identified scale (i.e., General PTT). Nonetheless, the effect of General PTT on Competence Trust was not great (i.e., the squared multiple correlation, SMC, was 0.11, which means that about 11 percent of variance in Competence Trust was explained by General PTT).

CONCLUSION

To examine the nature of propensity to trust in the context of B2C ecommerce, in this study, we used the Generalized Trust subscale of the Trust Inventory (Couch et al., 1996). The result of the study showed that the Faith in Humanity dimension (McKnight et al., 2002) was indeed an aspect of PTT. Unfortunately, however, the other dimension (i.e., Trusting Stance) was not included in our final test due to reliability and validity issues. The low reliability and validity may be due to the nature of the scale. The calculative nature may not be appropriate for this construct, PTT, because PTT is the general tendency before any mental processes (e.g., calculative process) begin to operate. Another reason may be due to the fact that some vague wordings of the items (e.g., face value, almost, etc.) are not appropriate in the ecommerce context (the original scale was developed in the context of individual people, i.e., romantic relationship). The result is not conclusive, however, and future studies are expected to examine these issues.

The two additional dimensions found in this study (Skeptical PTT and Specific PTT) are also worth examining further. The Skeptical PTT dimension was not included in the final analysis due to the unacceptable reliability and validity levels, but with more controlled data it may be a good source to identify the concept of propensity to distrust. The other dimension, Specific PTT, was included in the final analysis, but it didn't show significant effects on trust. This implies that this dimension may be different psychometrically from general propensity to trust, and further research is called for.

The General PTT dimension was the strongest, and it showed satisfactory levels of reliability and validity. It even showed external nomological validity. The hold-out sample also revealed the same result, and thus this dimension seems to be safe to be used in the ecommerce context.

The results of this study also provide a ground for understanding why sometimes PTT has an effect on trust, but other times not. As demonstrated in this study, some aspects of PTT indeed have effects on trust, while other aspects don't. Even the more influential construct (i.e., General PTT), has a relatively weak effect (SMC was 0.11) on trust which may be suppressed when more influential variables are included in the model (our data indicated this change when more influential variables such as website quality were included). Considering this, PTT may be more useful in other roles (e.g., moderating factor), and further studies are called for to examine these issues.

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